We claim:

1. A microchip device for the release of molecules comprising

a substrate comprised of two or more substrate portions bonded together,

at least two reservoirs in the substrate containing the molecules for release, and

a reservoir cap positioned on, or within a portion of, the reservoir and over the molecules, so that the molecules are released from the device by diffusion through or upon disintegration of the reservoir caps,

wherein release of the molecules from the reservoir is controlled by said diffusion through or disintegration of the reservoir cap.

2. The device of claim 1 wherein the substrate comprises an upper substrate portion adjacent the reservoir cap and a lower substrate portion distal the reservoir cap.

3. The device of claim 2 wherein a reservoir section in the upper substrate portion is in communication with a reservoir section in the lower substrate portion, the two reservoir sections forming a single reservoir.

4. The device of claim 3 wherein the reservoir section in the lower substrate portion has a volume that greater than the reservoir section in the upper substrate portion.

5. The device of claim 2 wherein the lower substrate portion is provided with an internal reservoir cap interposed between a reservoir section of the upper substrate portion and a reservoir section of the lower substrate portion, wherein release of the molecules from the reservoir section in the lower substrate portion is controlled by diffusion through or disintegration of the internal reservoir cap.

6. The device of claim 5 wherein the internal reservoir cap is disintegratable, so that the two reservoir sections form a single reservoir.

7. The device of claim 5 wherein the reservoir section of the lower substrate portion contains molecules different in quantity, type, or both quantity and type, from the molecules contained in the reservoir section of the upper

substrate portion.

8. The device of claim 1 further comprising a plurality of reservoirs comprising different types of molecules, different amounts of molecules, or combinations thereof.

9. The device of claim 1 wherein release of the molecules is controlled by a release system incorporating the molecules in the reservoir.

10. The device of claim 9 wherein at least one reservoir cap is disintegratable and the release system in a reservoir is disintegratable to release the molecules after the disintegration of the reservoir cap.

11. The device of claim 9 further comprising a cathode, a microprocessor, a timer, a demultiplexer, and a power source, wherein at least one reservoir cap is an anode, wherein upon application of an electric potential between the cathode and anode, at least one reservoir cap disintegrates, and exposes the underlying release system to the surrounding fluids.

12. The device of claim 9 wherein the release system comprises drug molecules in an excipient or diluent.

13. The device of claim 9 wherein the release system further comprises a biodegradable matrix.

14. The device of claim 1 wherein at least one reservoir cap is non-disintegratable and wherein the rate of diffusion of the molecules through the cap determines the time at which the molecules are released from the reservoirs.

15. The device of claim 1 wherein the substrate comprise three or more substrate portions bonded together.

16. A method for the delivery of molecules comprising

providing at a site where the molecules are to be delivered the microchip device of claim 1, and

controlling the release of the molecules from the reservoir by said diffusion through or disintegration of the reservoir cap.

17. The method of claim 16 wherein the molecules are drugs and the device is provided at the site by implanting or injecting the microchip into a

patient.

18. The method of claim 17 wherein the molecules are a drug selected from the group consisting of nucleic acids, proteins, amino acids, polysaccharides, organic molecules, and synthetic molecules.

19. The method of claim 18 wherein the drugs are in combination with a pharmaceutically acceptable carrier.

20. The method of claim 16 wherein the molecules are diagnostic or chemical reagents.

21. The method of claim 16 wherein the molecules are released in a pulsatile or continuous manner.

22. The method of claim 16 wherein controlling the release of the molecules is performed using a release system incorporating the molecules in the reservoir.

23. The method of claim 22 wherein the release system is formed by the molecules to be released.

24. The method of claim 23 wherein at least one reservoir cap is disintegratable and the reservoir caps are positioned on the reservoirs over the release system, wherein the rate of disintegration of the reservoir cap or the rate of diffusion of the molecule through the reservoir cap determines the time at which the molecules are released from the reservoir.

25. The method of claim 23 wherein the device further comprises a cathode, a microprocessor, a timer, a demultiplexer, and a power source, wherein at least one reservoir cap is an anode, and wherein the method further comprises applying an electric potential between the cathode and anode, to oxidize the reservoir cap and expose the underlying release system to the surrounding fluids.

26. The method of claim 16 wherein at least one reservoir cap is non-disintegratable and wherein the rate of diffusion of the molecules through the cap determines the time at which the molecules are released from the reservoirs.

27. A method of fabricating the microchip device of claim 1, the method

comprising:

providing a upper substrate portion and a lower substrate portion;

depositing and patterning a material, for use as an etch mask, on the upper substrate portion and on the lower substrate portion;

etching a plurality of first reservoir sections in the upper substrate portion;

etching a plurality of second reservoir sections in the lower substrate portion, wherein the first reservoir sections correspond to the second reservoir sections; and

bonding together the upper substrate portion and the lower substrate portion, such that the first reservoir sections are aligned with the second reservoir sections.

28. The method of claim 27 wherein the first reservoir sections are in communication with the second reservoir sections, each corresponding first and second reservoir sections together forming a single reservoir.

29. The method of claim 28 wherein the volume of the second reservoir section is greater than the volume of the first reservoir section.

30. The method of claim 27 further comprising

providing the lower substrate portion with an internal reservoir cap interposed between the first reservoir section and the second reservoir section, wherein release of the molecules from the second reservoir section is controlled by diffusion through or disintegration of the internal reservoir cap.

31. The method of claim 30 wherein the internal reservoir cap is disintegratable, so that the first and second reservoir sections together form a single reservoir.

32. The method of claim 27 wherein the device is made using a silicon-on-insulator (SOI) technique.

33. The method of claim 27 further comprising filling in a single step the first and second reservoir sections with the molecules to be released.

34. The method of claim 27 further comprising filling the first reservoir

section with a first quantity of the molecules to be released and filling the second reservoir section with a second quantity or type of the molecules to be released, wherein the filling of the first reservoir section is conducted in a separate step from filling of the second reservoir section.

35. The method of claim 33 wherein the reservoirs are filled by injection, inkjet printing, or spin coating.

36. The method of claim 27 wherein the upper substrate portion comprises a top surface and a bottom surface, wherein the material for use as an etch mask is deposited onto the top surface and the bottom surface, and wherein the first reservoir sections are etched so that the material deposited onto the lower surface serves as a membrane covering each first reservoir section.

37. The method of claim 36 further comprising depositing a thin film of conductive material over the membrane of insulating material covering each first reservoir section.

38. The method of claim 37 further comprising patterning the conductive film into electrodes so that an anode covers each membrane-covered reservoir opening and cathodes are placed on areas of the device not having reservoirs.

39. The method of claim 38 further comprising depositing a material over each electrode, except the portion of the anode directly over the reservoir and a portion of the cathode.

40. The method of claim 39 further comprising removing the membrane of insulating material from underneath the layer of conductive material covering each reservoir.

41. The method of claim 27 further comprising

providing a third substrate portion,

depositing and patterning a material, for use as an etch mask, on the third substrate portion;

etching a plurality of third reservoir sections in the third substrate portion, wherein the first reservoir sections correspond to the second reservoir

sections; and

bonding together the third substrate portion with one or both of the lower substrate portion and upper substrate portion, such that the third reservoir sections are aligned with the lower reservoir sections and upper reservoir sections.

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